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The Great Meteor of 1877, *March* 17. By Capt. G. L. Tupman.

A few minutes before 10 o'clock, G.M.T., on the evening of March 17, a meteor of very exceptional brilliancy was observed from the southern and western counties.

At Frome, 51° 14′ N., 2° 24′ W., it was seen by the Rev. G. Horner to begin 3° N. of *Pollux*, and terminate between γ and τ *Persei*.

At Cambridge, 52° 13′ N., 0° 6′ E., Mr. A. P. Trotter observed that its path and the line joining ϵ and ι *Orionis* bisected each other, the path being about twice as long as *Orion's* belt.

At Kensington, 51° 30′ N., 0° 12′ W., Mr. W. Thackeray saw it shoot from δ *Orionis*, downwards to the right, at an angle of 37° to the horizon.

At Gunnersbury, 51° 29′ N., 0° 17′ W., it appeared to come from *Gemini*, to pass over *Aldebaran*, and disappear below the *Pleiades* (*Nature*, March 22).

At Tetbury, 51° 38′ N., 2° 9′ W., Mr. E. C. Davis saw it disappear close to the *Pleiades*. Its path was inclined about 45° to the horizon, downwards and to the right.

At Rossall, 53° 55′ N., 3° 3′ W., it appeared to move from 3° north-west of α *Hydræ* to a point in R.A. $7^h\ 30^m$, Decl. 20° S. (*Nature*, March 29, and April 5).

At Brighton, 50° 49′ N., 0° 8′ W., Mr. W. Ainslie Hollis saw it disappear between the belt and the *Pleiades*, after describing a path of about 15°.

From these observations the radiant must have been very near R.A. 145°, N.P.D. 95°, or due *south*, at an altitude of 34°.

The point of disappearance is pretty accurately obtained at 29 statute miles over 5° 41′ N., 3° 4′ W. (near Pontypool). Combining, then, the Frome, Rossall, and Cambridge observations, as the most precise, the meteor first became visible 60 statute miles over 50° 59′ N., 3° 4′ W., or nearly over Taunton. This path satisfies the other descriptions within ordinary errors of observation. Its length was 59 statute miles. The duration was given as certainly about 3^s by Mr. Horner; 3^s by the observer at Gunnersbury; 4^s or 5^s by Mr. Hollis; 3^s by Mr. Ballard, at Banbury; and 2^s by another observer. The mean of these is $3^s{\cdot}1$, giving a relative velocity of 19 miles per second.

From the radiant point given above, the following parabolic elements of its orbit are deduced:—

	°
☊	177·4
I	8·5
π	222·5
q	·850

Motion Direct

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whence the relative velocity is 13·3 statute miles per second, and the total duration 4½ seconds.

The size of the meteor was described as one-sixth the diameter of the Moon, at Banbury, and also at Brighton, and one-half at Bristol, but doubtless this large size was chiefly due to irradiation.

During the first half of its track, the meteor was like burning magnesium in appearance, then the colour became red, and lastly was vivid green. All along its track fiery ashes fell towards the Earth, and after the extinction of the principal part, a body of dark red sparks continued to fall for a short distance, as seen at Tetbury by Mr. Davis. Lady Portsmouth, driving near Basingstoke, 90 miles from the meteor, and facing west, "was startled by what appeared to be blue or bluish-green lights falling apparently in large flakes into a field on her left. Some seconds after, while the whole country was lighted up as if by the brightest possible lightning, a large red ball was seen travelling with comparative slowness on the right, over a field, into which it appeared to fall." From Waterford the meteor was seen to be double, one part closely following the other. This duplicity is not reported from any other place.

The meteor left little or no streak, and did not detonate, for several of the observers state that they listened for any noise.

The average of all the recorded times is $9^h\ 57^m$ G.M.T.

In Mr. Greg's List of Meteoric Radiants for 1874, No. 15 is R.A. 143°, N.P.D. 97°, from January 3 to March 16 (?). Such a radiant would be nearly stationary for a long time, as the meteors overtake the Earth obliquely; its duration to March 17 is therefore confirmed.

A curious instance of the inaccuracy with which meteor tracks are sometimes described is that of "J. M. W." in the *Times*, who says that "in London the meteor was two-thirds the size of the Moon *when overhead*." As a matter of fact, it was never within 65° of the zenith of London.

Two Mechanical Solutions of Kepler's Problem.

By Prof. C. Pritchard.

It is unnecessary to dilate upon the boon which would be conferred on observatories and computers, if the tiresomeness of the solution of this problem can be diminished. Every skilful computer has no doubt his own peculiar method, which to him by habit facilitates the work more or less; perhaps that proposed by Dr. de Gasparis in the last Number of the *Monthly Notices* will be among the best. I venture to submit to the Society two mechanical methods of solution, which in the course of less than two minutes landed me just at the point reached in the ex-

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